Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

Alacran shoals, during the Antillean cruise of the yacht Utowana. An itinerary gives information as to the time devoted to each station, and a second part will contain a detailed account of the ecological observations, and also the plates made from the many fine photographs secured. The list of species is surprisingly long when one considers the shortness of the time and the often unfavorable conditions for collecting. Thirty-four new species are described, distributed from the fungi to the Compositae. —J. M. C.

MR. E. W. HERVEY, of New Bedford, Mass., has published independently his observations on "The colors of flowers."[5] In it he records a large amount of work which might have been better directed had he made himself familiar with the rather extensive literature on the subject. In a section on the sequence of color he assails with a vigor and directness worthy of a better object the shallow generalizations of Grant Allen on this subject. His presentation has no logical sequence and no definite marshaling of the many discrete facts which he has gathered respecting the relation of insects to color, nor any adequate correlation of these facts with the host of previous observations.— C. R. B.

THE MOST recent fascicles of Engler and Prantl's *Natürlichen Pflanzenfamilien* are nos. 193 and 194. The former contains the conclusion of Plectobasidiineæ (Sclerodermineæ) by ED. FISCHER, and the beginning of *Fungi imperfecti* by G. LINDAU. The Sphæropsidales are taken up, the 107 genera of Sphærioidaceæ being presented, and the Nectrioidaceæ begun. No. 194 contains the conclusion of Polypodiaceæ, Parkeriaceæ, Matoniaceæ, Gleicheniaceæ, Schizæaceæ, and Osmundaceæ, all by L. DIELS, and the beginning of Hydropteridineæ by R. SADEBECK.—J. M. C.

NOTES FOR STUDENTS.

SOME INTERESTING NOTES on *Arceuthobium pusillum* have been published by Hermann von Schrenk in *Rhodora* for January.

PROFESSOR J. M. HOLZINGER has found *Grimmia teretinervis* Limpr. growing near Winona, Minn. The species is new to North America.

AN ANNOTATED LIST of the puff-balls, slime-moulds, and cup-fungi of Orleans county, New York, has been published by Dr. Charles E. Fairman, of Lyndonville, in Proc. Rochester Acad. Sci. 3: 206–220. 1900.

DR. ROLAND THAXTER continues to discover new Laboulbeniaceæ. In a recent paper he describes 68 new species and 7 new genera of this family. This great extension of our knowledge of these fungi is in part the result of an examination of insect collections in the British and Paris Museums from all over the world, and of material from correspondents, as well as that gathered by the author in Maine, Florida, and elsewhere.— C. R. B.

---

[5] 8vo. paper, pp. 105, *figs. 3*.

MM. RENAULD and CARDOT describe in the ninth fascicle of their *Musci exotici novi vel minus cogniti*[6] a large number of species of mosses of Costa Rica and Mexico.—C. R. B.

DR. A. W. EVANS has published[7] a monograph on the Hawaiian Hepaticae of Schiffner's tribe Jubuloideæ, with full descriptions and sixteen admirable plates. Eight new species are described. The collections of Mr. C. M. Cooke, Jr., made in the summers of 1897, 1898, and 1899 mainly on Oahu and Kauai have furnished a large amount of interesting material.—C. R. B.

THE farmer's bulletin no. 112,[8] on *Bread and the principles of bread making*, prepared by Helen M. Atwater, is botanical in so far as it deals with yeasts and the structure of grains. Both these topics are treated most inaccurately. Indeed the whole bulletin strikes one as an inexpert compilation which experienced bread makers will laugh at and the inexperienced consult in vain for help.—C. R. B.

MR. R. G. LEAVITT has published[9] the results of some experiments to determine whether or not the roots of orchids and the shoots of Tillandsia, Sphagnum, and Leucobryum could condense water vapor from moist air. His results confirm those of Nabokich, published shortly before,[10] and it now seems highly improbable that the structures like the velamen of orchid roots and the hyaline cells of sphagnum are adapted to secure water in the form of vapor.—C. R. B.

A PECULIAR embryo-sac in *Peperomia pellucida* is reported by D. H. Campbell.[11] The megaspore originates in the usual way, but after the third division of the megaspore nucleus the eight nuclei are arranged about the periphery of the sac without any suggestion of polarity or differentiation in egg-apparatus, antipodals, and polar nuclei. The most striking fact is that still another division takes place, giving rise to sixteen nuclei, which are also arranged about the periphery of the sac. One of the nuclei in the micropylar end of the sac enlarges somewhat, and is to be regarded as the egg nucleus, but there are no distinct synergids, and no antipodals, although there is some grouping of a variable number of nuclei in the chalazal end of the sac. In one case the male nucleus, which is small and somewhat spirally coiled, was observed within the egg. The first division of the embryo, which has no suspensor, is vertical, and the second transverse. In the ripe seed the embryo fills the entire sac, but no organs are differentiated. The free nuclei of the embryo-sac never divide, but the perisperm performs the function of endosperm. The writer regards Peperomia as a transition form between angiosperms and lower seed plants or perhaps higher pteridophytes. It is a very old type, and apparently should be placed at the beginning of the angiosperms.—CHARLES J. CHAMBERLAIN.

---

[6] Bull. Soc. Roy. Bot. Belg. **38**: 1–48. (Paged 1–48, and bound in second fascicle of vol. 38, but not continuous with remainder of fascicle.)

[7] Trans. Conn. Acad. Sci. **10**: 387–462. *pls. 44–59.* 1900.

[8] U. S. Dept. of Agriculture.

[9] Rhodora **2**: 29, 63. 1900.

[10] Résumé in BOT. GAZ. **29**: 222. March 1900.

[11] Ber. d. deutsch. bot. Gesell. **17**: 452–456. *pls. 31.* 1899. See also Ann. Bot. **13**: 626. 1899.

RECENT STUDIES on the conidia of the Entomophthorales by Cavara[12] have shown two types in the structure and development of these organs. The conidia of *Empusa muscæ* are multinucleate, for the conidiophores are characteristically cœnocytes, and the constriction of the conidium from the tip always includes a mass of dense protoplasm with a number of nuclei. The nuclei are said to fragment in the conidia, dividing by constriction in the middle. On germination the conidium puts forth a tube, and the multinucleate protoplasm streams forward into it. The conidia of *Entomophthora Delpiniana* are uninucleate, perhaps for the reason that the conidiophores show a distinct tendency to pass from the condition of a cœnocyte to that of a segmented branched filament. The greater portion of the contents of the terminal cells, with a single nucleus, passes into a bud-like process which becomes cut off below by constriction to develop the conidium.—B. M. DAVIS.

IN a recent number of *Science*,[13] Professor C. S. Slichter of the University of Wisconsin proposes to use the kinetoscope for the reproduction and magnification of slow motions such as the growth, development, and movements of plants, flow of plastic substances, etc. His suggestion seems so likely to prove fruitful that we reproduce part of his note.

> The method that I selected . . . . was as follows: Let the moving body be photographed upon kinetoscope film at stated intervals — every few minutes, or every few hours, as the case may require. After a sufficient number of these photographs have been obtained, the film may be run through an ordinary projecting kinetoscope at the usual rate. In this way the motion that has required several weeks for its production may be reproduced upon the screen within the limits of a few minutes or seconds. I have magnified in this way the rate of motion about 500,000 fold, but of course there is no major limit to the possible rate of magnification. I made the first application of this method of magnifying slow motions to the motion of growing seedlings. Several peas and beans were placed in a glass root cage containing wet sand. The photographs were taken by artificial light at fixed intervals day and night for about three weeks. When the film is run through the kinetoscope the entire growth for the period of three weeks is reproduced in a few seconds. . . . . The kinetoscope also shows very clearly the different speeds at which the various parts of the plant grow,

---

[12] CAVARA: Osservazioni citologiche sulle Entomophthoreæ. Nuovo Giorn. Bot. Ital. **6**: 411. 1899.

[13] Science **11**: 535. 6 Ap. 1900.

and the different speeds at which the same part grows at different times. The greatest variety in the rate of growth exists, as I suppose is well known, and of course the kinetoscope brings out the relative rates of growth in a very truthful and graphic manner. . . . . At the present time I am preparing some additional films taken from growing seeds. Of course there is no reason why the photographing should not be continued until the plants have bloomed and fruited, if any fact important to mechanics or botany is likely to result from the trouble. Perhaps botanists know of matters in plant growth and plant development that it may pay them to investigate by the same method. I anticipate that some interesting facts concerning the mechanics of the root's motion into and through the soil will result from such studies.

MR. ALBERT F. WOODS, of the U. S. Division of Vegetable Physiology and Pathology, has found that chlorophyll is rapidly destroyed by oxidizing enzymes, which are normally present in small quantity in many of the higher plants. Under unknown conditions these enzymes become more active or are produced in larger quantity, causing disease marked by variegation, such as the mosaic disease of tobacco, which may be produced at will by inoculation with germ-free virus from diseased areas, and by cutting back healthy pot-grown plants which have about exhausted the soil in the pot and allowing only one shoot to develop rapidly in a high temperature under copious watering. The lighter areas invariably show the presence of larger amounts of some substance which turns a solution of gum guaiac blue. This reaction Mr. Woods accepts as indicating the presence of oxidizing enzymes, though aware that it has been considered unreliable. The oxidase and peroxidase may remain in soil uninjured for several months. The latter diffuses readily in plant tissues or agar plates, and may be dried without injury.[14]

In a short note in *Science* 11 : 17–19. 1900, Mr. Woods presents reasons for believing that in the mosaic disease of tobacco leaves the lighter colored areas contain more starch than the healthy tissues because the greater amounts of oxidase they contain partly or wholly inhibits the action of translocation diastase.—C. R. B.

PROFESSOR D. H. CAMPBELL has published some of the results of his studies of Araceæ in the current *Annals of Botany* (14: 1–25. *pls. 3.* 1900). Species of Dieffenbachia and Aglaonema were the forms from which he obtained the most complete results, although very many gaps remain to be filled even in them. In both of these cases the axial origin of the ovule seems undoubted, and this probably represents a primitive condition. One of the most striking facts presented by these forms, as well as others of the family, is the early development of a compact endosperm which completely fills the sac, and in some cases is probably developed before fertilization, and certainly often appears when no embryo is formed. In the whole family there is also a tendency for the antipodal cells to develop strongly, often dividing

---

[14] Centralbl. f. Bakt. 5^2 : 745–754. 1899.

and forming a tissue which supplements the endosperm. The embryo is also somewhat peculiar and suggestive. The failure to develop a suspensor is thought by Professor Campbell to be associated with the complete investment of the embryo by the endosperm. Two types of segmentation of the young embryo which were noted are: (1) the formation of two transverse divisions before any longitudinal walls appear, and (2) a regular quadrant formation suggestive of the first divisions of the fern embryo. The cotyledon is exceedingly large as compared with the stem and root, the last organ appearing late and being rather lateral in origin, as in Lysichiton and Pistia.

One of the peculiarities of Dieffenbachia is that the single archesporial cell divides transversely very unequally, the outer cell being the larger and becoming the embryo sac. The inner cell may divide once or not at all. The embryo sac in its development encroaches upon the whole of the nucellar tissue and finally is in contact with the inner integument. A nucellar cap, however, remains at the micropylar end of the sac, and its cells enlarge and divide, forming a somewhat permanent tissue, and suggesting the condition of things which Smith has found in Pontederiaceæ and Merrell in Silphium.

The characteristics of the group which have been developed so far, and which the author regards as primitive, are the axial ovule, the early development of a solid endosperm, the great development of the antipodal cells, and the absence of a suspensor.—J. M. C.

A NEW GENUS of the Volvocaceæ from the streams of central Illinois, has been described by Kofoid[15] and named *Platydorina*. It forms a flat horseshoe-shaped colony of sixteen or thirty-two cells, the plate being somewhat twisted into a left spiral. The rounded side of the outline is the anterior end, and the portion corresponding to the heel of the horseshoe is prolonged into three or five tails, hence the name of the single species, *P. caudata*. The contents of the cells are bright green, and each has a pair of cilia and generally the red pigment spot. The tails are formed of intercellular gelatinous matter, and they, with the peculiar twist of the colony, present the most prominent specific characters. No method of sexual reproduction has been discovered.

The asexual reproduction is by the repeated division of gonidial cells in the whole or part of the parent colony. The early stages of this segmentation are identical with those of Eudorina and Pleodorina. The colony becomes cup-shaped, then ellipsoidal, but finally flattens so that the cells from two sides are pressed together. They become intercalated in a common plate, in such a regular manner that every alternate cell has the cilia and pigment spot uppermost to the observer, while the other cells present the view with the pyrenoid most prominent. From this method of development it would appear that Platydorina is not a more specialized Gonium, but derived from ancestors of the Eudorina type. Platydorina is positively phototactic, exhibiting this habit to a conspicuous degree, but avoiding bright sunlight. The movement is always forward unless obstructions are met, and the rotation as a rule is from right over to left. This is the direction naturally favored by the resistance that the water offers to a moving body twisted in the manner of this coenobium. However, as the rotation in Pleodorina and Eudorina is predominately from right over to left, it is possible that the form of the colony in Platydorina is the result and not the cause of this rotation. Dr. Kofoid discusses the use of the term colony, as unfortunately inappropriate to the higher members of the Volvocaceæ, where there is a certain degree of cell differentiation, especially in Pleodorina and Carter's form of Eudorina, with the probability of a physiological cooperation between the cells of Volvox. Which facts make this group of plants a most interesting one from a speculative and evolutionary standpoint, and perhaps we may pardon their failure to accommodate themselves to a system that makes possible the use of exact terms.—B. M. DAVIS.

---

[15] KOFOID: On Platydorina, a new genus of the family Volvocidæ, from the plankton of the Illinois river. Bull. Ill. State Lab. of Nat. Hist. 5, 1899.